Kezar Falls Quadrangle, Maine

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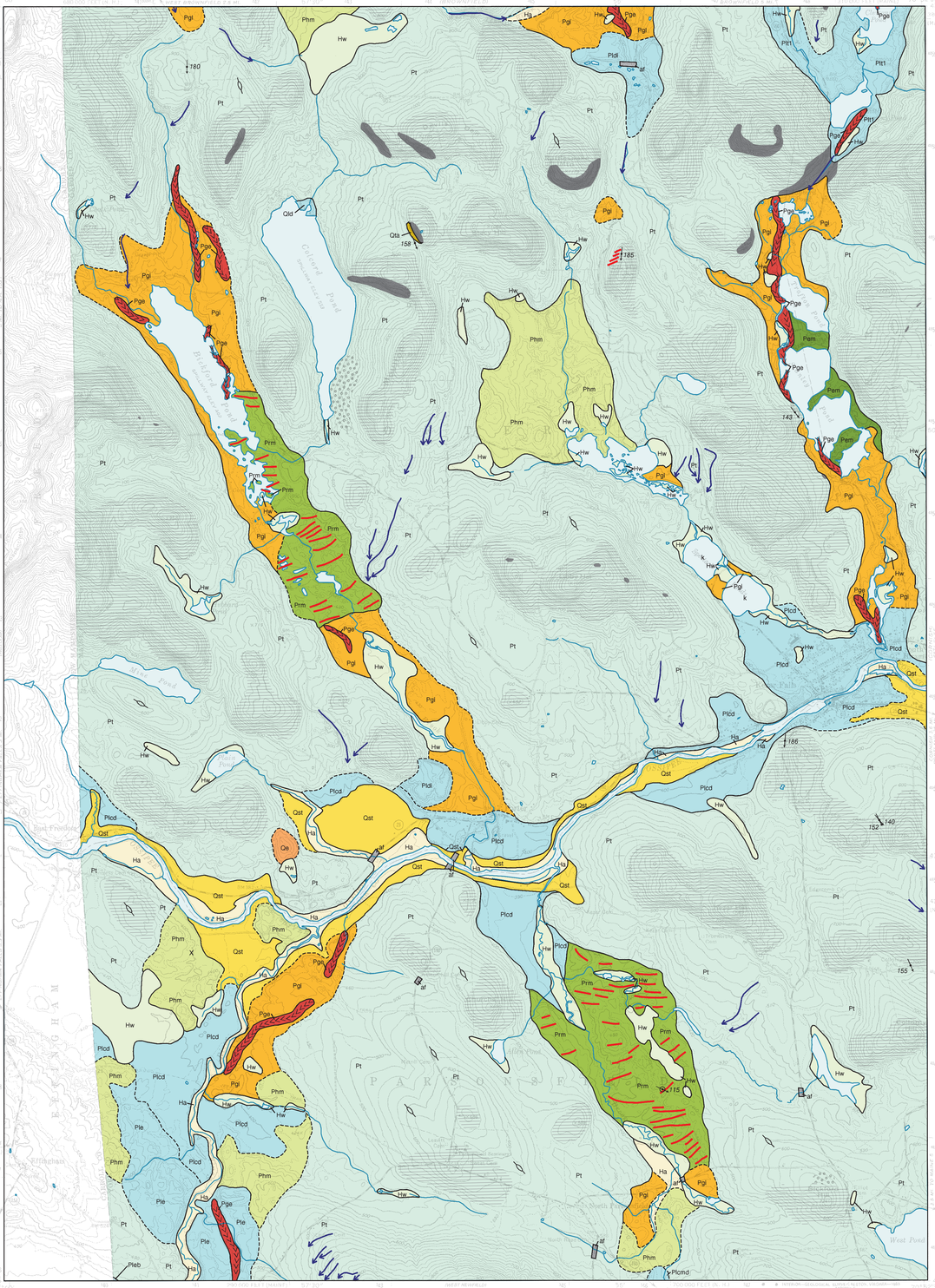
For additional information,
see Open-File Report 97-67.

Surficial Geology



SOURCES OF INFORMATION

Surficial geologic mapping by P. Thompson Davis completed during the 1993-1995 field seasons; funding for this work provided by the U. S. Geological Survey STATEMAP program. William R. Holland conducted additional surficial geologic and materials field work during the 1983 field season, funded by the significant sand and gravel aquifer program of the Maine Geological Survey.

Quadrangle Location

SCALE 1 : 24,000

1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

TRUE NORTH

Topographic base from U.S. Geological Survey Kezar Falls quadrangle, scale 1:24,000 using standard U.S. Geological Survey topographic map symbols.

The use of industry, firm, or local government names on this map is for location purposes only and does not impute responsibility for any present or potential effects on the natural resources.

af - **Artificial fill** - Narrow strips of fill underlying roads and railroads. Shown only where the addition of fill has modified the original topographic contour lines.

Ha - **Stream alluvium** - Sand, silt, gravel, and organic material; deposited on flood plains of modern streams.

Hw - **Wetland deposits** - Peat, muck, and fine-grained inorganic sediments; deposited in poorly drained areas.

Qst - **Stream-terrace deposits** - Sand and gravel deposited on former flood plains of the Saco River as it cut down to its present level; developed partly on older sand and gravel deposits.

Qta - **Talus deposits** - Large angular rocks deposited on slopes beneath bedrock cliffs.

Qe - **Eolian deposits** - Sand dunes resulting from wind erosion in the Ossipee River valley.

Qld - **Lake delta** - Delta of late-glacial or early postglacial age, built into north end of Colcord Pond.

Pldi - **Ice-contact glacial lake deltas** - Deltaic sand and gravel deposited in small ice-marginal lakes in the Ossipee River valley and northeast of Rattlesnake Mtn.

Plt1 - **Glacial Lake Tenmile deposits** - Sand and gravel deposited in a glacial lake in the Tenmile River basin; mostly deltaic, but probably includes some fluvial deposits; this unit is related to higher level of the lake, at elevation of about 470-480 ft; Plt_1 stage draincd southward through a spillway at the head of Tenmile River valley (northeastern part of Kezar Falls quadrangle).

Plcd - **Glacial Lake Cornish deposits** - Deltaic sand and gravel deposited in a glacial lake in the Ossipee River valley.

Ple - **Glacial Lake Effingham deposits** - Sand and gravel deposited in a glacial lake in the South River valley; may include deltaic, fluvial, and lake-bottom sediments.

Pleb - Bottom deposits associated with the Lake Effingham stage.

Plcmd - **Glacial Lake Cedar Mountain deposits** - Sand and gravel deposited in a glacial lake in the Great Brook valley.

Pgl - **Ice-contact deposits** - Undifferentiated sand and gravel deposits formed in contact with melting glacial ice.

Pge - **Esker deposits** - Sand and gravel deposited by meltwater streams in glacial tunnels; unit may also include some tunnel-mouth lacustrine fan deposits; chevrons indicate inferred direction of glacial stream flow.

Phm - **Hummocky moraine** - Glacial till with hummocky topography, which usually contains many boulders; lenses of sand, gravel, and silt are locally abundant.

Prm - **Ribbed moraine** - Area with very bouldery till ridges deposited on valley floors; occurs primarily in valleys that presently drain northward.

Pem - **End moraine** - Ridge of till and/or sand and gravel deposited at the glacier margin.

Pt - **Till** - Loose to very compact, poorly sorted, mostly non-stratified mixture of sand, gravel, and silt-size rock debris deposited by glacial ice; locally contains lenses of water-laid sediment and may be very bouldery.

Bedrock outcrops/thin-drift areas - Ruled pattern indicates areas where outcrops are common and/or surficial sediments are generally less than 10 ft thick (mapped partly from air photos); gray dots show small individual outcrops noted in the field; gray areas are large outcrops, such as cliffs.

Area of many large boulders

X **Very large boulder** - Location of exceptionally large glacially-transported boulder, south of Saco River in western part of quadrangle.

Contact - Boundary between map units; dashed where very approximate.

Moraine ridge - Line shows crest of moraine ridge in area mapped as till or ribbed moraine.

135 **Striation locality** - Arrow indicates direction of glacial flow inferred from striations (scratches and grooves) on bedrock. Dot marks point of observation. Number is azimuth (in degrees) of flow direction.

135 **Till fabric locality** - Arrow indicates average trend of long axes of stones in glacial till exposure, located on east side of Great Brook valley in Parsonsfield. Dot marks point of observation. Number is inferred glacial flow direction in degrees.

Glacially streamlined hill - Symbol shows trend of long axis, which parallels former ice-flow direction.

Meltwater channel - Channel eroded by glacial meltwater stream or drainage from glacial lake; arrow shows inferred direction of former stream flow.

k **Kettle** - Depression created by melting of buried glacial ice and collapse of overlying sediments.

USES OF SURFICIAL GEOLOGY MAPS

A surficial geology map shows all the loose materials such as till (commonly called hardpan), sand and gravel, or clay, which overlie solid ledge (bedrock). Bedrock outcrops and areas of abundant bedrock outcrops are shown on the map, but varieties of the bedrock are not distinguished (refer to bedrock geology map). Most of the surficial materials are deposits formed by glacial and deglacial processes during the last stage of continental glaciation, which began about 25,000 years ago. The remainder of the surficial deposits are the products of postglacial geologic processes, such as river floodplains, or are attributed to human activity, such as fill or other land-modifying features.

The map shows the areal distribution of the different types of glacial features, deposits, and landforms as described in the map explanation. Features such as striations and moraines can be used to reconstruct the movement and position of the glacier and its margin, especially as the ice sheet melted. Other ancient features include shorelines and deposits of glacial lakes or the glacial sea, now long gone from the state. This glacial geologic history of the quadrangle is useful to the larger understanding of past earth climate, and how our region of the world underwent recent geologically significant climatic and environmental changes. We may then be able to use this knowledge in anticipation of future similar changes for long-term planning efforts, such as coastal development or waste disposal.

Surficial geology maps are often best used in conjunction with related maps such as surficial materials maps or significant sand and gravel aquifer maps for anyone wanting to know what lies beneath the land surface. For example, these maps may aid in the search for water supplies, or economically important deposits such as sand and gravel for aggregate or clay for bricks or pottery. Environmental issues such as the location of a suitable landfill site or the possible spread of contaminants are directly related to surficial geology. Construction projects such as locating new roads, excavating foundations, or siting new homes may be better planned with a good knowledge of the surficial geology of the site. Refer to the list of related publications below.

OTHER SOURCES OF INFORMATION

1. Davis, P. T., and Holland, W. R., 1997, Surficial geology of the Kezar Falls 7.5' quadrangle, Oxford and York Counties, Maine: Maine Geological Survey, Open-File Rept. 97-67, 14 p.
2. Davis, P. T., 1998, Surficial materials of the Kezar Falls quadrangle, Maine: Maine Geological Survey, Open-File Map 98-230.
3. Neil, C. D., 1998, Significant sand and gravel aquifers of the Kezar Falls quadrangle, Maine: Maine Geological Survey, Open-File Map 98-197.
4. Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print)
5. Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine Geological Survey, scale 1:500,000.
6. Thompson, W.B., Crossen, K. J., Borns, H. W., Jr., and Andersen, B. G., 1989, Glaciomarine deltas of Maine and their relation to late Pleistocene-Holocene crustal movements, *in* Anderson, W. A., and Borns, H. W., Jr. (eds.), Neotectonics of Maine: Maine Geological Survey, Bulletin 40, p. 43-67.